Table S1. Matrix of learning set variables LS 2021,04,25 Q I-IV.

LS 2021,04,25 Q- I	LS 2021,04,25 Q- II	LS 2021,04,25 Q- III	LS 2021,04,25 Q- IV
GENDER	GENDER	GENDER	GENDER
AGE	AGE	AGE	AGE
AV	AV	AV	AV
CQ	CQ	CQ	CQ
CS	CS	CS	CS
CU	CU	CU	CU
CW	CW	CW	CW
CY	CY	CY	CY
DA	DA	DA	DA
DC	DC	DC	DC
DE	DE	DE	DE
DG	DK	DS	DO
DW	DY	EC	EA
ED	EE	EG	EF
EL	EP	EX	ET
DI	DM	DU	DQ

Table S2. The effect of the neural modeling performed for the set LS 2021,04,25 Q- I.

Nr.	Type	Quality lear.	Quality valid.	Quality test.	Error lear.	Error valid.	Error test.	Learning
1	MLP 1:1-1-1:1	0,9357	0,9247	0,9310	0,1678	0,1405	0,2159	BP100, CG20, CG1b
2	MLP 3:3-8-3-1:1	0,8952	0,8199	0,7891	0,1604	0,1202	0,1833	BP100, CG20, CG4b
3	MLP 5:5-10-4-1:1	0,7947	0,7779	0,7011	0,1423	0,1139	0,1634	BP100, CG20, CG33b
4	MLP 9:9-8-1:1	0,7453	0,7525	0,7133	0,1334	0,1102	0,1656	BP100, CG20, CG48b
5	MLP 8:8-5-1:1	0,7987	0,7376	0,7134	0,1432	0,1085	0,1654	BP100, CG20, CG3b
6	RBF 14:14-5-1:1	0,9116	0,8711	0,8923	0,0958	0,0770	0,1210	KM, KN, PI
7	RBF 14:14-15-1:1	0,8066	0,8371	0,7453	0,0848	0,0724	0,1017	KM, KN, PI
8	RBF 14:14-10-1:1	0,8263	0,8205	0,7695	0,0868	0,0715	0,1053	KM, KN, PI
9	RBF 14:14-11-1:1	0,8370	0,8057	0,7796	0,0880	0,0701	0,1061	KM, KN, PI
10	RBF 14:14-13-1:1	0,8333	0,7997	0,7843	0,0876	0,0690	0,1066	KM, KN, PI

Table S3. Sensitivity analysis of RBF 14:14-5-1:1 networks.

	Rank	Quotient
DW	1	1,025810
GENDER	2	1,022931
CY	3	1,019064
AGE	4	1,014891
CS	5	1,008216
CQ	6	1,002889
DE	7	1,002556
DC	8	1,002496
CW	9	1,000556
CU	10	0,99766
AV	11	0,99732
DG	12	0,99143
ED	13	0,98984
EL	14	0,98867

Figure S1. Diagram of the RBF 14:14-5-1:1 network defining the DI parameter.

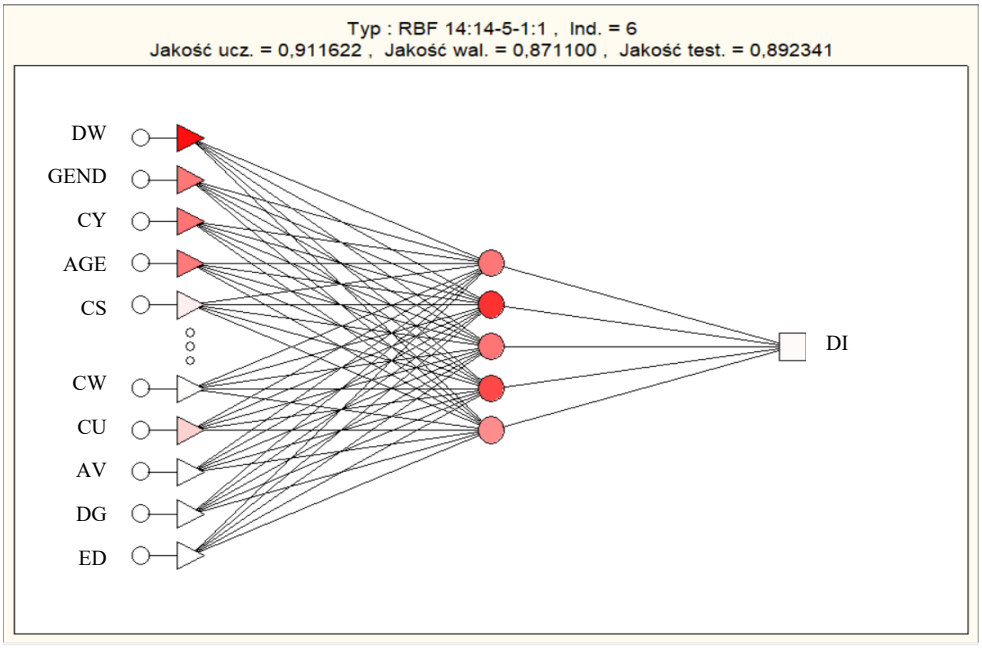


Table S4. The effect of the neural modeling performed for the LS 2021,04,25 Q- II set.

Nr.	Type	Quality lear.	Quality valid.	Quality test.	Error lear.	Error valid.	Error test.	Learning
1	MLP 1:1-6-5-1:1	0,9732	0,9990	0,9731	0,2059	0,2162	0,3036	BP100, CG20, CG0b
2	MLP 6:6-4-1:1	0,7482	0,8324	0,6971	0,1583	0,1793	0,2167	BP100, CG20, CG4b
3	MLP 7:7-12-5-1:1	0,7287	0,8216	0,6716	0,1542	0,1783	0,2069	BP100, CG20, CG6b
4	MLP 2:2-8-3-1:1	0,7782	0,8065	0,6659	0,1646	0,1768	0,2051	BP100, CG20, CG2b
5	MLP 2:2-1-1:1	0,8476	0,8228	0,7659	0,1795	0,1756	0,2360	BP100, CG20, CG14b
6	RBF 12:12-5-1:1	0,8808	0,9107	0,8888	0,0978	0,1028	0,1434	KM, KN, PI
7	RBF 12:12-13-1:1	0,7602	0,8847	0,7145	0,0844	0,1017	0,1163	KM, KN, PI
8	RBF 12:12-7-1:1	0,8496	0,8788	0,8317	0,0943	0,1001	0,1345	KM, KN, PI
9	RBF 12:12-20-1:1	0,7288	0,8764	0,8339	0,0846	0,0980	0,1331	KM, KN, PI
10	RBF 12:12-10-1:1	0,7367	0,8221	0,8039	0,0818	0,0940	0,1290	KM, KN, PI

Table S5. Sensitivity analysis of the RBF 12:12-5-1:1 network.

	Rank	Quotient
AV	1	1,026139
DK	2	1,020221
DY	3	1,019059
AGE	4	1,016806
DE	5	0,999930
CS	6	0,999540
DC	7	0,998969
EE	8	0,997174
EP	9	0,995340
CW	10	0,98631
CU	11	0,98397
GENDER	12	0,96540

Figure S2. Diagram of the RBF 12:12-5-1:1 network defining the DM parameter

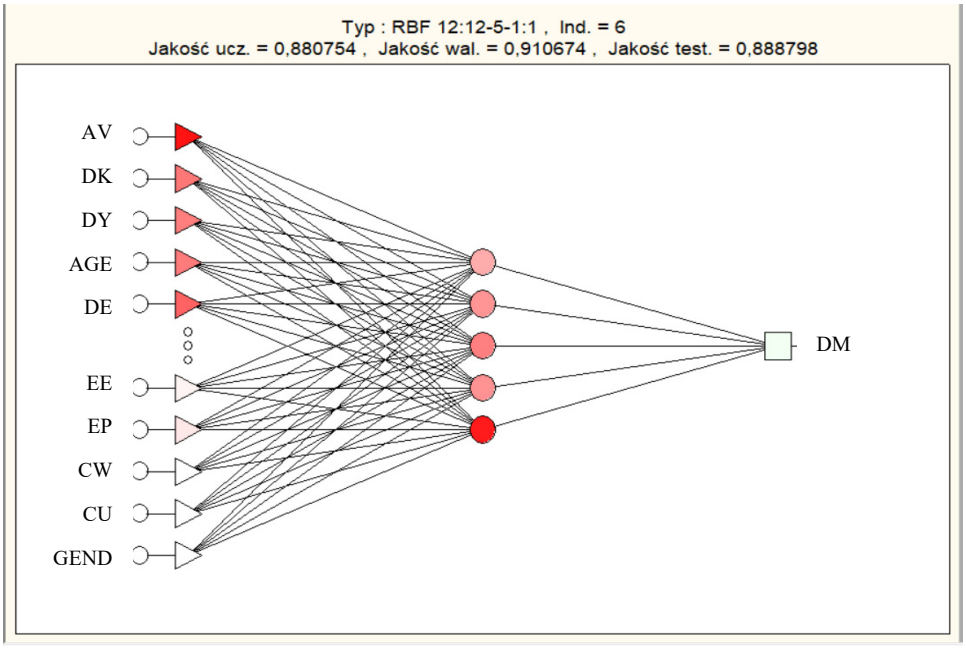


Table S6. The effect of the neural modeling performed for the LS 2021,04,25 Q- III set.

Nr.	Type	Quality lear.	Quality valid.	Quality test.	Error lear.	Error valid.	Error test.	Learning
1	MLP 1:1-5-1:1	0,8433	0,8769	0,8591	0,1241	0,1239	0,1362	BP100, CG20, CG3b
2	MLP 1:1-8-4-1:1	0,6930	0,8040	0,7216	0,1019	0,1137	0,1135	BP100, CG20, CG11b
3	MLP 4:4-4-1:1	0,5351	0,6316	0,5738	0,0788	0,0892	0,0902	BP100, CG20, CG38b
4	MLP 9:9-7-1:1	0,4297	0,5236	0,4618	0,0633	0,0740	0,0728	BP100, CG20, CG63b
5	MLP 11:11-13-10-1:1	0,4533	0,5190	0,5042	0,0667	0,0733	0,0801	BP100, CG20, CG55b
6	RBF 13:13-10-1:1	0,6777	0,7428	0,6890	0,0657	0,0692	0,0722	KM, KN ,PI
7	RBF 13:13-20-1:1	0,6125	0,6459	0,6643	0,0603	0,0615	0,0720	KM, KN ,PI
8	RBF 13:13-36-1:1	0,4563	0,6469	0,5637	0,0443	0,0603	0,0590	KM, KN ,PI
9	RBF 13:13-47-1:1	0,4434	0,6279	0,5306	0,0430	0,0585	0,0567	KM, KN ,PI
10	RBF 13:13-31-1:1	0,5260	0,6119	0,5954	0,0510	0,0571	0,0617	KM, KN ,PI

Table S7. Sensitivity analysis of RBF 13:13-10-1:1 networks.

	Rank	Quotient
EG	1	1,064450
GENDER	2	1,058868
AV	3	1,027203
EC	4	1,016206
CW	5	1,013149
DS	6	1,012426
AGE	7	1,011831
DA	8	1,008238
CY	9	1,005744
DE	10	1,00292
DC	11	0,99968
CS	12	0,99941
EX	13	0,97755

Figure S3. Diagram of the RBF 12:12-5-1:1 network defining the DU parameter.

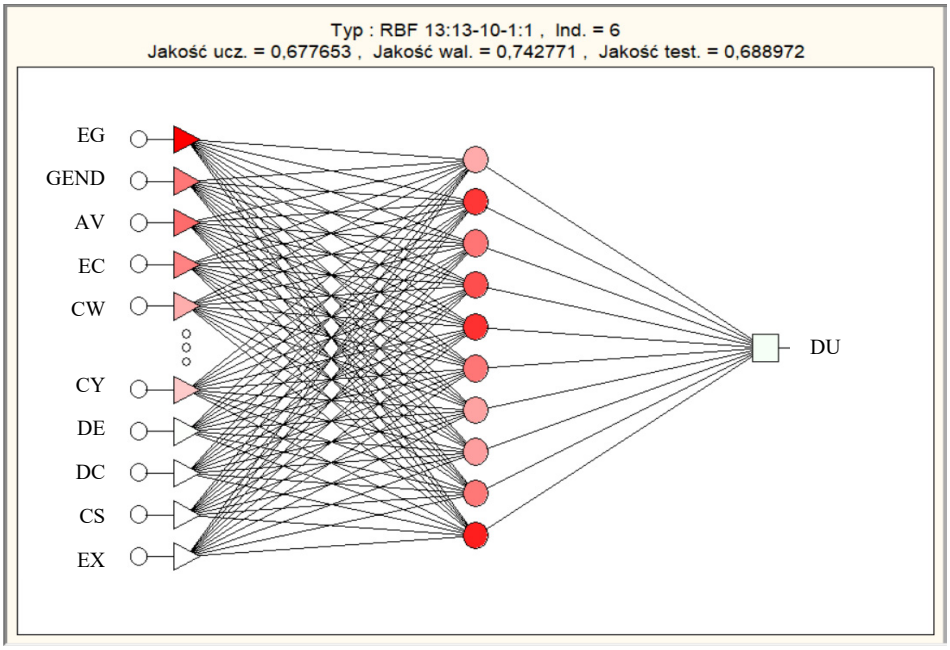


Table S8. The effect of the neural modeling performed for the LS 2021,04,25 Q-III set.

Nr.	Type	Quality lear.	Quality valid.	Quality test.	Error lear.	Error valid.	Error test.	Learning
1	MLP 1:1-8-1:1	0,8660	0,8434	0,8249	0,1647	0,1896	0,1608	BP100c,CG20, CG24b
2	MLP 1:1-7-2-1:1	0,6846	0,7318	0,6562	0,1302	0,1664	0,1284	BP100, CG20, CG21b
3	MLP 4:4-4-1:1	0,5106	0,6237	0,6110	0,0971	0,1403	0,1197	BP100, CG20, CG107b
4	MLP 11:11-7-1:1	0,5212	0,5437	0,5703	0,0992	0,1237	0,1126	BP100, CG20, CG49b
5	MLP 6:6-4-1:1	0,4835	0,4788	0,4668	0,0920	0,1087	0,0935	BP100,CG20,CG132b
6	RBF 10:10-10-1:1	0,6280	0,7221	0,7255	0,0655	0,0899	0,0776	KM, KN, PI
7	RBF 10:10-20-1:1	0,5780	0,6788	0,6665	0,0606	0,0849	0,0731	KM, KN, PI
8	RBF 10:10-23-1:1	0,5851	0,6732	0,6625	0,0610	0,0848	0,0714	KM, KN, PI
9	RBF 10:10-25-1:1	0,5180	0,6267	0,6353	0,0540	0,0772	0,0685	KM, KN, PI
10	RBF 10:10-27-1:1	0,5188	0,6147	0,6651	0,0541	0,0762	0,0724	KM, KN, PI

Table S9. Sensitivity analysis of RBF network 10:10-10-1:1.

	Rank	Quotient
EA	1	1,102474
AV	2	1,041425
AGE	3	1,027120
EF	4	1,017095
ET	5	1,017007
DO	6	1,012029
CS	7	1,003954
CQ	8	0,998992
CW	9	0,996286
GENDER	10	0,98011

Figure S4. Diagram of the RBF 10:10-10-1:1 network defining the DQ parameter.

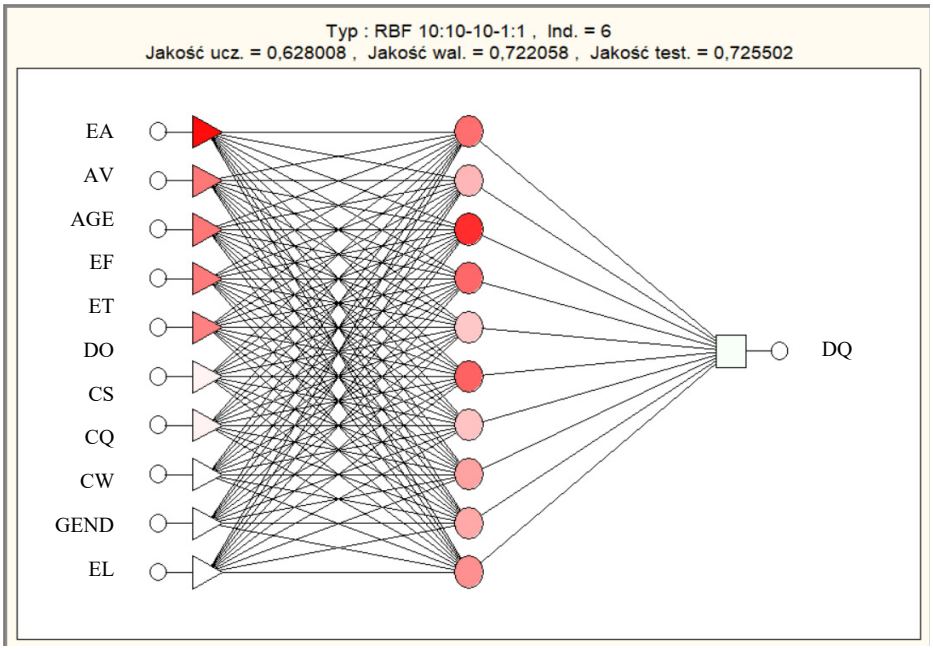


Table S10. Summary of generated models and their quality characteristics.

Quadrant	I	II	III	IV
The model	RBF 14:14-5-1:1	RBF 12:12-5-1:1	RBF 13:13-10-1:1	RBF 10:10-10-1:1
Quality for the learning set	0,8923	0,8888	0,689	0,7255
Error *RMSE* for the learning set	0,121	0,1434	0,0722	0,0776

Table S11. Summary of the variables used in the neural modeling process for each quadrant, the variables necessary for the operation of the model are marked in gray.

Quadrant	I	II	III	IV
Model	RBF 14:14-5-1:1	RBF 12:12-5-1:1	RBF 13:13-10-1:1	RBF 10:10-10-1:1
Variable				
1	AGE	AGE	AGE	AGE
2	GENDER	GENDER	GENDER	GENDER
3	AV	AV	AV	AV
4	CQ	CQ	CQ	CQ
5	CS	CS	CS	CS
6	CU	CU	CU	CU
7	CW	CW	CW	CW
8	CY	CY	CY	CY
9	DA	DA	DA	DA
10	DC	DC	DC	DC
11	DE	DE	DE	DE
12	DG	DK	DS	DO
13	DW	DY	EC	EA
14	ED	EE	EG	EF
15	EL	EP	EX	ET
Network output	DI	DM	DU	DQ

Table S12. The effect of the neural modeling performed for the set of LS 2021,0425 4Q.

Nr.	Type	Quality lear.	Quality valid.	Quality test.	Error lear.	Error valid.	Error test.	Learning
1	MLP 1:1-11-4:4	0,9803	0,9958	1,0555	0,1738	0,1666	0,1913	BP100, CG20, CG31b
2	MLP 1:1-14-12-4:4	0,7629	0,9137	0,7082	0,1308	0,1448	0,1415	BP100, CG20, CG95b
3	MLP 9:9-17-11-4:4	0,7556	0,7126	0,8172	0,1228	0,1266	0,1339	BP100, CG20, CG23b
4	MLP 10:10-17-11-4:4	0,7372	0,7592	0,8136	0,1248	0,1264	0,1395	BP100, CG20, CG47b
5	MLP 26:26-18-18-4:4	0,6233	0,7735	0,9944	0,0980	0,1261	0,2595	BP100, CG20, CG10b
6	RBF 19:19-15-4:4	0,6895	0,8066	0,9140	0,0612	0,0728	0,0818	KM, KN, PI
7	RBF 19:19-5-4:4	0,7542	0,8117	0,8593	0,0708	0,0728	0,0842	KM, KN, PI
8	RBF 19:19-10-4:4	0,7137	0,7967	0,8467	0,0654	0,0719	0,0801	KM, KN, PI
9	RBF 19:19-13-4:4	0,7149	0,7950	0,8436	0,0639	0,0714	0,0762	KM, KN, PI
10	RBF 19:19-11-4:4	0,7107	0,7844	0,8491	0,0629	0,0707	0,0797	KM, KN, PI

Table S13. Sensitivity analysis of the RBF 19:19-5-4:4 network.

	Ranga	Iloraz
DS	1	1,018318
EC	2	1,016550
DW	3	1,013011
EA	4	1,012940
DY	5	1,011573
AV	6	1,010975
DO	7	1,007101
AGE	8	1,004293
DK	9	1,003046
EE	10	1,00232
GENDER	11	1,00219
EF	12	1,00186
EX	13	0,99895
ED	14	0,99832
EG	15	0,99739
CQ	16	0,99660
DC	17	0,99578
EP	18	0,99568
ET	19	0,98950

Figure S5. Diagram of the RBF 19:19-5-4:4 network specifying the parameter.

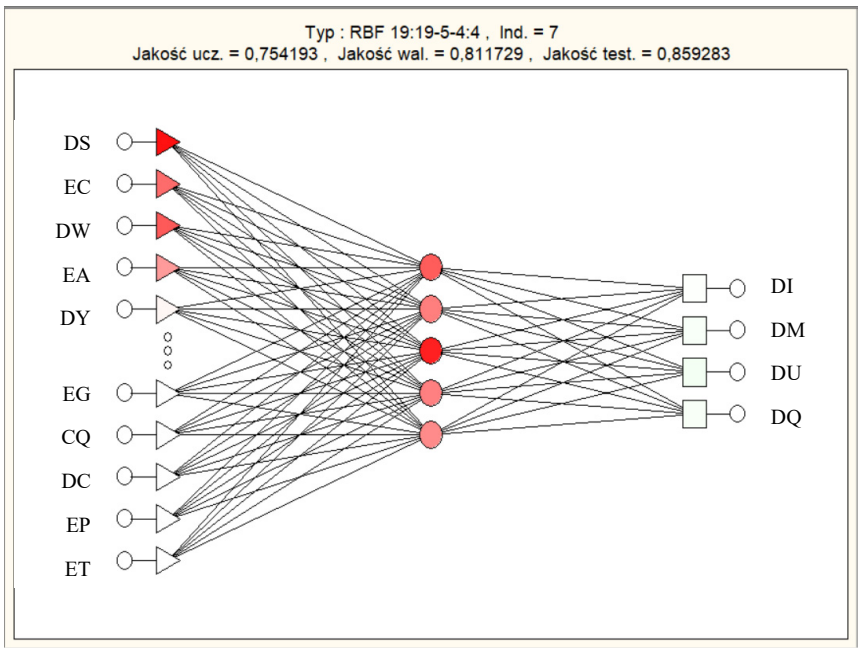


Table S14. Summary of generated ANN models. Networks ranked by quality for the learning set (descending) and by RMSE error for the learning set (ascending).

Nr.	Quadrant	Model	Quality for test set	Error for test set
1	I-IV	RBF 19:19-15-4:4	0,9140	0,0818
2	I	RBF 14:14-5-1:1	0,8923	0,1210
3	II	RBF 12:12-5-1:1	0,8888	0,1434
4	IV	RBF 10:10-10-1:1	0,7255	0,0776
5	III	RBF 13:13-10-1:1	0,6890	0,0722

Table S15. Matrix of variables for the individual ANN models used.

		Ćwiartka	I	II	III	IV	I-IV	Number of occurrences of the variable
		Model	RBF 14:14-5-1:1	RBF 12:12-5-1:1	RBF 13:13-10-1:1	RBF 10:10-10-1:1	RBF 19:19-15-4:4	
		Zmienne						
Variables for all quadrants		1	GENDER	GENDER	GENDER	GENDER	GENDER	5
		2	AGE	AGE	AGE	AGE	AGE	4
		3	AV	AV	AV	AV	AV	5
		4	CQ	CQ	CQ	CQ	CQ	3
		5	CS	CS	CS	CS	CS	4
		6	CU	CU	CU	CU	CU	2
		7	CW	CW	CW	CW	CW	4
		8	CY	CY	CY	CY	CY	2
		9	DA	DA	DA	DA	DA	1
		10	DC	DC	DC	DC	DC	4
		11	DE	DE	DE	DE	DE	3
4CW	CW I	12	DG	-	-	-	DG	1
		13	DW	-	-	-	DW	2
		14	ED	-	-	-	ED	2
		15	EL	-	-	-	EL	1
	CW II	12	-	DK	-	-	DK	2
		13	-	DY	-	-	DY	2
		14	-	EE	-	-	EE	2
		15	-	EP	-	-	EP	2
	CW III	12	-	-	DS	-	DS	2
		13	-	-	EC	-	EC	2
		14	-	-	EG	-	EG	2
		15	-	-	EX	-	EX	2
	CW IV	12	-	-	-	DO	DO	2
		13	-	-	-	EA	EA	2
		14	-	-	-	EF	EF	2
		15	-	-	-	ET	ET	2
Output			DI	-	-	-	DI	
			-	DM	-	-	DM	
			-	-	DU	-	DU	
			-	-	-	DQ	DQ	